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CTSO Course Alignments: Food Science and Safety

Below you will find standards for the Food Science and Safety course aligned with competitive events from appropriate career and technical student organizations (CTSOs). Knowing the aligned events for your organization will allow you to have additional tools for teaching course standards, as well as increase student engagement and preparation in your CTSO activities. The final column recommends potential tools from other CTSO organizations. Even if your students are not participating in these organizations, available rubrics, tools, and materials can also add to the instructional resources at your disposal for best teaching your content.

Important to note: While the aligned activities below can be important tools in teaching course standards, it is important to note that events may not cover a standard in its entirety and should not be the sole instructional strategy used to address a standard.

	STANDARD	ALIGNED FFA COMPETITIVE EVENTS/PROGRAMS	OTHER POTENTIAL CTSO TOOLS & RESOURCES
1	Using news media and relevant academic journals, investigate current applications of food science and describe the scope and economic importance of the food industry in the United States, including imports and exports. Citing specific textual evidence, describe how the study of food science and related sciences impacts quality of life and enhances a Supervised Agricultural Experience (SAE) program. (TN Reading 1; TN Writing 8)	• **FFA**: Agricultural Issues	• **HOSA**: Researched Persuasive Speaking, Biomedical Debate • **TSA**: Debating Technological Issues, Essays on Technology
2	Review common laboratory safety procedures for tool and equipment operation in the agricultural and biosystems engineering laboratories, including but not limited to accident prevention and control procedures. Demonstrate the ability to follow safety and operational procedures in a lab setting and complete a safety test with 100 percent accuracy. (TN Reading 3; ARNR CS)		• **HOSA**: Biomedical Laboratory Science • **SkillsUSA**: Occupational Health and Safety
3	Create a chart, table, or graphic to illustrate significant trends with regard to supply and demand of food products across the world population, citing specific textual evidence from news media and government agency reports. Identify and summarize common environmental and safety concerns regarding food production and the food supply. (TN Reading 1, 2, 7; TN Writing 9; TN Environmental Science 3)	• **FFA**: Agricultural Communications	• **FBLA:** Global Business • **TSA**: Desktop Publishing

4	Review common laboratory safety procedures for tool and equipment operation in the food science laboratories, including but not limited to accident prevention and control procedures. Demonstrate the ability to follow safety and operational procedures in a lab setting and complete a safety test with 100 percent accuracy. (TN Reading 3)		• **HOSA**: Public Service Announcement • **SkillsUSA**: Occupational Health and Safety • **TSA**: Digital Video Production
5	Differentiate between each food group and compare and contrast their nutritive values. Explain how chemical and physical properties of foods influence nutritional value and quality. Examine the basic principles of proper nutrition, including the identification and evaluation of the six essential nutrients needed for good health. (TN Reading 4; TN Writing 7; TN Chemistry 1)	• **FFA**: Agricultural Communications	• **HOSA**: Researched Persuasive Speaking, Extemporaneous Writing
6	Investigate and apply the concepts of basic chemical processes and interactions of constituent components of foods. Through experimentation and observation, identify chemical properties of food that are affected by production, processing, and storage. (TN Reading 3)	• **FFA**: Agriscience Fair	
7	Identify common food additives (preservatives, antioxidants, stabilizers, colors, and flavors) and describe their general purposes. Synthesize information from academic journals and news media to summarize safety issues associated with food additives, assessing the extent to which the reasoning and evidence provided supported claims made. (TN Reading 2, 8; TN Writing 8)	• **FFA**: Agriscience Fair	• **HOSA**: Researched Persuasive Speaking, Public Health, Public Service Announcement • **TSA**: Essays on Technology, Digital Video Production
8	Examine the role of microorganisms in food products and evaluate the implications for human consumption. (TN Writing 7)	• **FFA**: Agriscience Fair	
9	Research common microorganisms that cause fermentation, discuss the benefits or dangers of fermentation in food products and processing. Develop an annotated chart that illustrates fermentation techniques and the foods they are used to create, describing the basic chemical principles of fermentation and the factors that affect the fermentation process. (TN Reading 2; TN Writing 2, 4)	• **FFA**: Agriscience Fair	
10	Differentiate among the various microorganisms that cause food spoilage and determine their life cycles. Compare and contrast the application of food preservation methods to prevent the growth of microbes in food. Outline the processes for heating, refrigerating, and freezing for food preservation. (TN Reading 2; TN Writing 4)	• **FFA**: Agriscience Fair	• **HOSA**: Researched Persuasive Speaking, Public Service Announcement • **SkillsUSA**: Occupational Health and Safety • **TSA**: Digital Video Production

11	Research and cite texts identifying types and general characteristics of microorganisms associated with foodborne illnesses. Summarize safe food habits and practices by researching proper procedures for safe handling, storage, preparation, and cooking; to compose a checklist of general safety guidelines for different food groups, such as fruits and vegetables, red meat, fish, eggs, and dairy products. (TN Reading 1, 2; TN Writing 4)	• **FFA**: Agricultural Communications, Food Science and Technology	• **HOSA**: Researched Persuasive Speaking • **SkillsUSA**: Occupational Health and Safety
12	Describe procedures and inspection standards for sanitation in the food production industry. Demonstrate in a live setting or in a presentation format the ability to follow procedures for appropriate chemical selection, cleaning techniques, and insect and rodent control methods. Identify concepts and principles that provide the scientific foundation for current food sanitation standards. (TN Reading 3; TN Writing 7, 8)	• **FFA**: Agricultural Communications, Food Science and Technology	• **HOSA**: Public Service Announcement • **SkillsUSA**: Occupational Health and Safety • **TSA**: Digital Video Production
13	Research principles and applications of the Hazard Analysis and Critical Control Point (HACCP) system and describe how they apply to food safety. Interpret food industry inspection standards to assess conditions related to food safety and sanitation. Create a model HACCP plan including a summary of procedures to control biological, chemical, and physical hazards in food production. (TN Reading 2, 3, 4; TN Writing 4)	• **FFA**: Agricultural Communications, Food Science and Technology	• **SkillsUSA**: Occupational Health and Safety
14	Analyze state and federal laws and regulations governing food inspection standards, and argue for their importance to public health, citing specific evidence from case studies to develop your claim. Define the roles of state and government agencies responsible for the establishment and enforcement of food safety regulations. Compose a narrative that interprets the regulations governing the "Local Foods for Local Schools" program in Tennessee. (TN Writing 1, 2)	• **FFA**: Agricultural Communications, Food Science and Technology	• **HOSA**: Public Health, Researched Persuasive Speaking, Biomedical Debate • **TSA**: Debating Technological Issues
15	Research major development trends in the food science industry by analyzing documents authored by for-profit companies and lobbying organizations, defining the question each seeks to address. Compare and contrast the use of advanced technologies in food production, such as but not limited to biotechnology, irradiation, and genetically modified organisms (GMOs), citing specific textual evidence. Summarize technology principles, process effects, and consumer concerns, referencing the extent to which reasoning and evidence presented for each supports specific claims. (TN Reading 2, 6, 8)	• **FFA**: Agricultural Issues	• **HOSA**: Researched Persuasive Speaking
16	Formulate a hypothesis regarding a current food science issue. Design and conduct an original experiment to prove or disprove the hypothesis. Collect the appropriate data to evaluate claims, synthesizing and communicating results within the broader context of food science. (TN Writing 7)	• **FFA**: Agricultural Issues	

ALL	**CAN BE USED WITH ALL/MOST STANDARDS**	• **FFA**: Food Science and Technology	• **FCCLA**: Illustrated Talk, Chapter in Review Display, Chapter in Review Portfolio, Nutrition and Wellness, Sports Nutrition, Advocacy, Food Innovations • **HOSA**: Health Education, Prepared Speaking • **TSA**: Prepared Presentation, Extemporaneous Presentation • **SkillsUSA**: Career Pathways Showcase, Job Skills Demonstration A, Job Skills Demonstration O, Prepared Speech, Extemporaneous Speaking, Chapter Display